Risk of emerging vector borne diseases in Europe

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Globalisation, extreme weather events attributable to climate change, social and political instability, changes in landscape use or management are potential drivers for the introduction of pathogens in previously free regions. Vector-borne diseases, with their complex epidemiology being the result of a delicate interaction between vectors, hosts and pathogens, are amongst the most complex diseases to prevent and control. Their potential impact on plant, animal and/or public health, trade or environment justify efforts to predict their risk and improve preparedness.

In this study, a Method for Integrated Risk assessment developed was used to assess and compare the possible rate of introduction of exotic mosquito-borne viruses (MBVs) into the European Union. A detailed methodology was developed to integrate existing databases in the assessment, thus making the assessment data-driven and quantitative where possible. However, where only expert opinion is available, guidelines are proposed to make the use of qualitative data repeatable. The assessment resulted in a characterisation of MBVs; an assessment of their global occurrence, the possible rate of entry, probability of transmission and establishment. These steps resulted in a first screening of the overall rate of introduction of the MDVs that is comparable and updatable and pointed out diseases with a moderate annual rate of introduction such as Bunyamwera virus, Vesicular stomatitis virus or Eastern equine encephalitis virus, which could merit a more in-depth analysis. Last but not least, aspects of the assessments that were accompanied with higher uncertainty are highlighted and research needs are recommended.